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theory of the subject. This will probably appeal to some teachers as carrying a good idea rather far. The so-called " fundamental relations " among the functions play a much less prominent part than in most other modern texts. They are proved on pages 12 and 13, but no special emphasis is laid on them and practically no use is made of them until page 95. Even in the later chapter on identities, the advice to the student as to " how to prove an identity " makes no mention of the use of the fundamental relations. It would seem that the great importance of these relations in later work in mathematics should warrant more effort to impress them upon the memory of the student. Circular measure of angles, inverse functions, graphs and trigonometric identities and equations, as well as the application of trigonometry to algebra are put in later chapters, after the solution of oblique triangles—the logical arrangement both for those who want these subjects and for those who do not.

The book is well printed and bound and presents an attractive appearance. It is quite free from typographical errors, but has two rather surprising mistakes in definition on page 40: In line 1 a logarithm is defined as a *power*, instead of *the exponent of a power*, and in line 19 the statement is made that " any positive, rational number may be taken as the base," thus *including unity* and *excluding e*. Also, the treatment of negative characteristics is likely to be confusing to beginners. But these defects can easily be corrected by any competent teacher, and the book will no doubt receive the same cordial welcome that has been given to others of the same series.

E. P. R. Duval.

University of Oklahoma.

PROBLEMS AND SOLUTIONS.

Edited by B. F. Finkel and R. P. Baker.

[Send all communications to B. F. Finkel, Springfield, Mo.]

PROBLEMS FOR SOLUTION.

ALGEBRA.

465. Proposed by CYRUS B. HALDEMAN, Ross, Ohio.

Having given $\tan^{-1} 1 = \tan^{-1} \frac{1}{2} + \tan^{-1} \frac{1}{3}$, show that

$$\tan^{-1} 1 = 5 \tan^{-1} \tfrac{1}{8} + 2 \tan^{-1} \tfrac{1}{18} + 3 \tan^{-1} \tfrac{1}{57}.$$

466. Proposed by E. B. ESCOTT, Kansas City, Mo.

For what functions, f, are the following relations true:

When $\dfrac{f(x, y, z)}{X} = \dfrac{f(y, z, x)}{Y} = \dfrac{f(z, x, y)}{Z}$, then $\dfrac{f(X, Y, Z)}{x} = \dfrac{f(Y, Z, X)}{y} = \dfrac{f(Z, X, Y)}{z}$.

467. Proposed by IRA M. DE LONG, The University of Colorado.

Determine the function, f, from the functional relation, $f(x + y) = f(x) + f(y) + 2xy$.